

Safe Use of Portable Generators

EHS Procedure EHS-SAF-31, Rev.0

Effective Date: 03/01/2015

1.0 PURPOSE

Establish the process for the safe use of 12 kW or less portable generators.

2.0 SCOPE

This procedure applies to all NCI at Frederick activities and all work conducted by Leidos Biomedical Research, Inc. and its subcontractors at all facilities, to include leased facilities.

3.0 PROCEDURE

Step	Job Role	Action
1	Supervisor	Ensure that personnel utilizing portable generators are trained on this procedure, the guidelines in Appendix A, and the manufacturer's instructions for the specific generator being used. Follow all manufacturer's instructions.
2	EHS Safety Staff	Provide support as requested to portable generator users.
3	Portable Generator Users	<ul style="list-style-type: none">• Do not operate portable generators unless you are familiar with the safety requirements outlined in Appendix A.• Ensure that portable generators are used in accordance with the safety requirements of this procedure and per the manufacturer's instructions. In the event that this procedure conflicts with the manufacturer's instructions, the manufacturer's instructions shall be followed.• When using a portable generator to supply power to a building, an engineered manual electrical transfer switch must be installed and utilized. If the generator is not capable of supporting all building electrical operations, priorities must be set and breakers to non-critical loads need to be switched off by a qualified person*. This switch must be rated to transfer under the required load. <u>Under no circumstances shall the transfer switch feed plug be handled when a load is applied.</u> * Due to the possibility of damage to electrical distribution systems, only qualified and experienced personnel should operate and make final electrical connections for this equipment.

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		<p>Follow the proper sequence of energizing, below.</p> <ol style="list-style-type: none">1. Move the generator from storage to the location of use. Once the generator is at its location and secured (chocking all wheels on units without feet or wheel locks) orange traffic/hazard cones or barricading should be placed around to indicate and secure work area.2. Position the generator away from possible exhaust entrainment into a building and secure the mechanical room door or opening in order to protect extension cords or transfer switch feed cable . Use a protective sleeve (e.g., PVC or other non-conductive rigid protection) around the feed cable(s) at the doorway in the event of unexpected door closure.3. Plug the feed cable into the generator's properly rated outlet (or extension cords into the appliance and generator).4. Start the generator per manufacturer's instruction.5. Operate the manual transfer switch from normal feed to generator feed (if necessary).6. Apply an administrative lock and tag to secure the switch.
4	Portable Generator Users	<p>To disconnect the generator and restore power perform the following actions in order.</p> <ol style="list-style-type: none">1. Stop the generator per manufacturer's instructions.2. Remove the administrative lock and tag on the transfer switch.3. Operate the manual transfer switch from generator feed to normal feed.4. Unplug the feed cable from the generator's proper outlet and secure (or unplug extension cords first from the appliance, then from the generator).5. Allow the generator to cool before moving it back to the storage location.
5	FME Electric Shop	Actuate transfer switch and inspect monthly per NFPA 110(99), Sec. 6-3.5.

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4.0 RECORDS

Description of Record (include form number if applicable)	Custodian	Storage Medium
None	NA	NA

5.0 RELATED DOCUMENTS

The following documents provide requirements and background information relevant to the subject of this procedure.

- OSHA Fact Sheet, “Using Portable Generators Safely” - https://www.osha.gov/OshDoc/data/Hurricane_Facts/portable_generator_safety.html
- NFPA 110(99), Sec. 6-3.5

6.0 DEFINITIONS

Term	Definition
none	NA

7.0 ABOUT THIS PROCEDURE

Issuing organization:	EHS
Final approver:	Terri Bray
Subject matter expert:	Greg Ragan
Review cycle (months):	36
Date last revised:	2/13/15
Date last reviewed:	2/13/15

8.0 SUMMARY OF CHANGES IN THIS VERSION

Initial Issue.

APPENDIX A: Guidelines for the Safe Use of Portable Generators

Follow these minimum safety guidelines for the safe use of portable generators in addition to the manufacturer’s instructions. In the event that this procedure conflicts with the manufacturer’s instructions, the manufacturer’s instructions shall be followed.

Proper PPE for generator operation and refueling includes the following.

- Hearing Protection (properly rated earplugs or muffs)
- Safety glasses (and face shield for refueling)
- Leather work gloves
- Safety Shoes (when moving or unloading)

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Portable generators are internal combustion engines used to generate electricity and are commonly used during disaster response. Portable generators can be dangerous if used incorrectly.

Major Causes of Injuries and Fatalities

- Shocks and electrocution from improper use of power or accidentally energizing other electrical systems.
- Carbon monoxide from a generator's exhaust.
- Fires from improperly refueling the generator or inappropriately storing fuel.

Safe Work Practices

- Inspect portable generators prior to use for damage or loose fuel lines that may have occurred during transportation and/or handling.
- Keep the generator dry.
- Operate on a dry surface.
- The generator must be grounded to the frame.
- Gas caps must seat properly.
- Outlets must be in good shape, i.e., not broken or with exposed internal parts.
- Ensure there are no leaks in the fuel system.
- Gas cans must be in good shape, with no major dents.
 1. All gas cans must be Type I or Type II safety cans.
 2. Spring loaded caps must be operable.
 3. Cans are not to be stored next to the generator and must be separated by a minimum of four feet.
- Maintain and operate portable generators in accordance with the manufacturer's use and safety instructions.
- **Never attach a generator directly to the electrical system of a structure** unless the generator has a properly installed transfer switch because this creates a risk of electrocution for workers.
- When plugging electrical appliances directly into the generator (i.e., instead of using a transfer switch to power a breaker panel), always use the appliance manufacturer's approved or supplied cords. When using extension cords to directly power electrical appliances, use undamaged heavy-duty extension cords that are grounded (3-pronged).
- Always use ground-fault circuit interrupters (GFCIs) as per the manufacturer's instructions.
- Before refueling, shut down the generator and let it cool down. Never store fuel indoors or refuel a generator when it is hot.
- A charged 10 Pound ABC fire extinguisher must be readily available.

Carbon Monoxide Poisoning

Carbon monoxide (CO) is a colorless, odorless, toxic gas. Many people have died from CO poisoning because their generator was not adequately ventilated.

- Never use a generator indoors.
- Never place a generator outdoors near doors, windows, or vents.
- If you or others show symptoms of CO poisoning — dizziness, headaches, nausea, tiredness—get to fresh air immediately and seek medical attention.